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# Technological Needs of Rural Women in Processing and Preservation of Fruits and Vegetables at Chomu, Jaipur

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**Abstract**

The present study was an attempt to study the extent of participation of rural women in processing and preservation of fruits and vegetables, their knowledge and the technological needs of rural women in processing and preservation practices. The study was conducted at Hathnoda Gram Panchayat, Chomu in Jaipur district of Rajasthan. The total sample consisted of 50 rural women were selected from selected villages. Personal interview technique was used for collection of data from the respondents. Frequency percentage, mean per cent and mean weighted score were used for analysis of data. The result of the study revealed that majority (48%) of the respondents were in the medium level of knowledge category and as compare to all selected aspects of processing and preservations of fruits and vegetables , they possessed highest knowledge in fruits and vegetable selection aspect (73.14 MPS) and lowest knowledge in marketing aspect (54.16 MPS). It was found that majority (58%) respondents were in medium level of participation category. Maximum participation was found in washing aspect (63.32 MPS), whereas lowest was in marketing aspect (48.66 MPS). The overall knowledge gap in fruits and vegetable processing and preservation practices was 39.85 percent. On the basis of findings it can be concluded that there is a need to give knowledge to rural women to minimize the existing technological gap through intervention of training/educational programmes.

**Keywords:** Technological Need, Rural woman, Processing, Preservation, Fruits and Vegetables.

**Introduction**

Fruit and vegetables are an important supplement to the human diet as they provide the essential minerals and vitamins and fiber required for maintaining health. They are protective foods. India is known to be a fruit basket of the world. It ranks second in fruits and vegetables production in the world, after China. As per National Horticulture Database published by National Horticulture Board, during 2014-15 India produced 86.602 million metric tones of fruits and 169.478 million metric tones of vegetables. The total production of fruits and vegetables in the world is around 370 metric tones. But there is considerable gap between the gross production and net availability of fruits and vegetables due to heavy post-harvest losses. Due to inadequate facilities for processing nearly 35 to 40% produce of the total production is wasted amounting to Rs. 3000 crores annually. Despite the comfortable production of fruits in the country, the per capita consumption of fruits is 85 gm/person/day against the ICMR recommendation of 100/gm/person/day (Chhada2001). The problem of fruit losses is critical which can be minimized by processing and preservation of fruits for their proper consumption. Hence, there is a need for maximum commercial utilization of fruits and vegetables and to adopt production and marketing activities to the requirements of the world market and to cater to domestic demand which, over the past few years, has been increasing because of various socio-economic factors. Today, food preservation is very important to fulfill the food supply needs of a developing country like India. It also ensures that the food is available and its supply is maintained at all times. Furthermore, problems like food shortage or famine can also be avoided. Therefore, fruit and vegetable processing has been engaging the attention of planners and policy makers as it can

contribute to the economic development of rural population. and value addition of their products; it will generate more income and employment in rural sector.

Women play an important role in agriculture and they are molder and builder of any nation's destiny. The rural women are very active in cultivation, dairy, fisheries, crop processing and other allied areas. According to Dixit *et al.* (2010) in their study on "Post-harvest operations in food grains and role of farm women: An economic analysis of women empowerment in Arid India" reported that farm women were usually responsible for food processing. Their role from harvesting to marketing of food grains is as important as men farmers. An estimated average of 80 per cent of the handling work is done by women. Since, women are the major contributor in fruit processing and preservation activities and due to their inadequate knowledge and skills these losses are very high. To minimize these losses it is important to equip them with latest fruit processing and preservation technologies by providing adequate access to information. So it is necessary to find out the specific areas in which knowledge of rural women is lacking. Thus the present study entitled **"Technological Needs of Rural Women in Processing and Preservation of Fruits"** is an attempt to know whether the fruit processing and preservation technologies have reached to the rural women, whether they have knowledge about these technologies or not and to identify the technological needs of rural women for fruit processing and preservation technologies. The study was undertaken with the following specific objectives-

1. To assess the knowledge of rural women about techniques of processing and preservation of fruits and vegetables.
2. To find out the participation of rural women in activities related to processing and preservation of fruits and vegetables.
3. To identify the technological needs of the rural women in processing and preservation of fruits and vegetables.

Presently, the farmers sell their products without processing if they do primary processing

**Methodology**

The study was conducted at Hathnoda Gram Panchayat, Chomu in Jaipur district of Rajasthan. Two village namely Bhopawas, Hathnoda, in Hathnoda gram panchayat were selected, purposely (on the basis of highest production of aonla, ber and tomato). A sample of 50 rural women (25 from each village) was selected purposely who were ready to participate and cooperate to the study. Personal interview technique was used for collection of data from the respondents. The data were collected through structured interview schedule to assess their knowledge and practices regarding processing and preservation. After completion of field work the data were tabulated and analyzed. Frequency percentage, mean per cent and standard deviations were used for analysis of data.

**Results and Discussion**

Table1 presents the overall percent of sample with low, medium, high levels of knowledge regarding processing and preservation of fruits and vegetables. Table depicts that majority (48%) of the respondents were having medium levels of knowledge with 66 MPS, followed by (36%) and (16%) of respondents were in medium and high level of knowledge with 47 and 88 MPS respectively.

**Table 1: Distribution of respondent by their overall level of knowledge regarding processing and preservation**

N=50

| Knowledge Level | N | % | Mean percent score (MPS) |
|---|---|---|---|
| Low (34-57) | 18 | 36 | 47 |
| Medium (58-80) | 24 | 48 | 66 |
| High (81-103) | 8 | 16 | 88 |

Findings are supported by Anuradha (2004) revealed that majority of the women (76%) had average knowledge about considerations during preservation process, preparation of various products from fruits and vegetables, quality and cleanliness aspects.

**Table 2: Distribution of respondents by their level of knowledge in various aspects of Processing and Preservation of fruits and vegetables**

N=50

| S.No. | Aspects | Low | | Medium | | High | |
|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % |
| 1 | Fruits and vegetables selection | 14 | 28 | 19 | 38 | 17 | 34 |
| 2 | Washing | 18 | 36 | 19 | 38 | 13 | 26 |
| 3 | Grading | 26 | 52 | 13 | 26 | 11 | 22 |
| 4 | Preparation of Products through processing and preservation | 21 | 42 | 18 | 36 | 11 | 22 |
| 5 | Packaging | 12 | 24 | 28 | 56 | 10 | 20 |
| 6 | Storage | 25 | 50 | 15 | 30 | 10 | 20 |
| 7 | Marketing | 23 | 46 | 15 | 30 | 12 | 24 |

Table 2 presents the information about distribution of respondents by their different aspects wise level of knowledge regarding processing and preservation of fruits and vegetables.

**Fruits and Vegetables Selection**

The table indicates that in aspect of fruits & vegetables selection highest number of respondents which has formed 38 percent were in category of medium level knowledge followed by high level knowledge (34%) whereas only 28 per cent of the respondents were in low knowledge category.

**Washing**

Majority of respondents (38%) had medium knowledge followed by 36 per cent were having low level knowledge and rests of 26 per cent had high knowledge regarding washing aspect fruits and vegetable.

**Grading**

The table 2 shows that more than half of respondents (52%) were having low knowledge regarding grading activity of fruits and vegetable processing. While 26 per cent of the respondents were found to possess medium level knowledge and only 22 per cent of the respondents were found to be high in knowledge.

**Preparation of Products**

Results also reveals that majority (42%) of the respondents were found in low knowledge about preparation of products. Whereas 36 per cent of the respondents were found in medium level of knowledge category and only 22 per cent of the respondents possessed high level of knowledge regarding this aspect.

**Packaging**

Table indicates that most of the respondents (56%) were in the category of medium knowledge followed by 24 per cent of the respondents were found to posses low level of knowledge and only 20 per cent of the respondents were had high level of knowledge regarding packaging aspect.

**Storage**

Results revealed that fifty per cent of the respondents were found in the category of low knowledge about storage of processed products of fruits and vegetables, whereas 30 per cent of the respondents were found in medium level of knowledge category while only 20 per cent of the respondents possessed high knowledge regarding storage aspect of processing and preservation of fruits and vegetables

**Marketing**

Table shows that majority of respondents (46%) were having low knowledge regarding marketing of prepared processed products followed by 30 per cent of the respondents were found to posses medium level knowledge and 24 per cent of them were found in high level of knowledge category.

Similar findings were found by Mande *et.al.* (2007) reported that 50 per cent of farm women had medium to high knowledge of grading, packing and transportation of fruits and vegetables.

**Table 3: Distribution of respondent by their overall level of participation regarding processing & preservation**

N=50

| Category | n | % | Mean percent score (MPS) |
|---|---|---|---|
| Low (0-15) | 11 | 22 | 32 |
| Medium (16- 30) | 29 | 58 | 59 |
| High (31-46) | 10 | 20 | 80 |

Table 3 shows the distribution of respondents according to their participation in low, medium and high levels of category. Table depict that majority (58%) of the respondents were in medium levels of participation category with MPS 59 followed by low level category (22%) with 32 MPS and only 20 per cent were in high level of category with MPS 80. This was due to the illiteracy and lack of knowledge among rural women about different fruit processing and preservation technologies. The findings are supported by (Sidhu 2007), in his study on "Participation pattern of farm women in post – harvesting" found that women were found to contribute substantially in drying, storage and cleaning. In other post-harvest activities, majority of the farm women were working with male members. However, least participation was reported in marketing and processing.

**Table 4: Distribution of Respondents by Their Level of Participation in Various Aspects of Processing & Preservation**

N=50

| S. No. | Aspects | Low | | Medium | | High | |
|---|---|---|---|---|---|---|---|
| | | f | % | f | % | f | % |
| 1 | Fruits and vegetables selection | 18 | 36 | 17 | 34 | 15 | 30 |
| 2 | Washing | 16 | 32 | 14 | 28 | 20 | 40 |
| 3 | Grading | 16 | 32 | 21 | 42 | 13 | 26 |
| 4 | Preparation of Products through processing and preservation | 11 | 22 | 26 | 52 | 13 | 26 |
| 5 | Packaging | 22 | 44 | 21 | 42 | 7 | 14 |
| 6 | Storage | 16 | 48 | 18 | 36 | 8 | 16 |
| 7 | Marketing | 25 | 50 | 16 | 32 | 9 | 18 |

Table 4 presents the information about distribution of respondents by their different aspects wise level of participation regarding processing and preservation of fruits and vegetables.

**Fruits and Vegetables Selection**

The above table indicates that in aspect of fruits and vegetables selection highest number of respondents which has formed 36 per cent was in category of low level participation followed by medium level (34%), whereas only 30 per cent of the

respondents were in high level category of participation in selection of fruit and vegetable aspect.

**Washing**

This table further reveals that in washing aspect majority of respondents (40%) were in category of participation followed by 32 per cent were having low level of participation but rests of 28 per cent had high participation regarding washing aspect.

**Grading**

Results shows that maximum numbers of respondents (42%) were having medium level participation regarding grading activity of fruits and vegetable. While 32 per cent of the respondents were found to low level participation and only 26 per cent of the respondents were found in medium level participation category.

**Preparation of products**

Majority (52%) of the respondents were found in medium category of participation about preparation of products. Whereas 26 per cent of the respondents were found in high level and 22 per cent were in low level participation.

**Packaging**

Table indicates that maximum percent of the respondents (44%) were in low level of participation category regarding packaging of products followed by 42 per cent of the respondents were found to posses medium participation and only 14 per cent of the respondents were found to be high participation in packaging aspect.

**Storage**

Table shows that majority (48%) of the respondents were found in low participation category about storage of processed products of fruits and vegetables, whereas 36 per cent of the respondents were found in medium level of participation category while only 16 only of the respondents possessed high participation regarding storage aspect processing and preservation of fruits and vegetables

**Marketing**

Table shows that fifty per cent of the respondents were having low level of participation regarding marketing, followed by 32 per cent of the respondents were in medium level and 18 per cent of them were found in high level of participation category.

Technological needs or gap in knowledge and practice of the rural women in processing and preservation of fruits & vegetables was identified on the basis of existing knowledge and practice level of the respondents. Technological needs of the respondents in different aspects of fruit processing and preservation is depicted in Table 5.

**Table 5: Knowledge and practice gap of the respondents in different fruit and vegetables processing and preservation techniques**

N=50

| S. No. | Aspects | Knowledge | | | Participation | | |
|---|---|---|---|---|---|---|---|
| | | Mean percent score (MPS) | Gap % | Rank | Mean percent score (MPS) | Gap % | Rank |
| 1 | Fruits and vegetables selection | 73.14 | 26.86 | VII | 61.33 | 38.67 | VI |
| 2 | Washing | 72.50 | 27.50 | VI | 63.32 | 36.68 | VII |
| 3 | Grading | 55.76 | 44.24 | II | 52.20 | 47.80 | III |
| 4 | Preparation of Products | 58.20 | 41.80 | III | 56.8 0 | 43.20 | V |
| 5 | Packaging | 64.58 | 35.42 | V | 54.00 | 46.00 | IV |
| 6 | Storage | 61.50 | 38.50 | IV | 52.00 | 48.00 | II |
| 7 | Marketing | 54.16 | 45.84 | I | 48.66 | 51.34 | I |
| Over all gap | | 60.15 | 39.85 | | 56.82 | 43.18 | |

**Knowledge Gap**

Table 5 revealed the aspect wise mean percent score of respondent's knowledge and found that fruits and vegetables selection aspect got highest MPS 73.14, followed by washing (72.50%), packaging (64.58%), storage (61.5%), grading (55.76%), preparation of product (58.20%) and marketing (54.16%). The overall MPS of the respondents regarding fruit and vegetables processing and preservation techniques was 60.15 per cent. Table 5 also depicts that the overall knowledge gap in fruit and vegetable processing and preservation was 39.85 per cent. Aspects wise knowledge gap focuses that highest gap was observed in the components marketing (45.84 %) than grading (44.24 %), preparation of products (41.80 %) and storage (38.50 %), which were ranked I, II, III and IV; respectively. Similarly, knowledge gap was found about the packaging component was 35.42 per cent and washing and fruit and vegetable selection components were found medium knowledge gap i.e. 27.50 and 26.86 per cent; respectively. Sabharwal and Panwar (2015) also revealed that rural women possessed low pre exposure knowledge in all the fruits and vegetables preservation technologies.

**Participation Gap**

Table 5 depicts the aspect wise mean per cent score of the participation about processing and preservation of fruits and vegetables. The maximum MPS (63.32%) were found regarding participation in washing aspect followed by selection of fruits and vegetables (61.33%), preparation of products (56.80%), packaging (54%), grading (52.20%), storage (52%) and lowest was in marketing (48.66%). The overall MPS of all the aspects was found 56.82 per cent. Table 5 also depicts that the overall participation (practice) gap in fruit and vegetable processing and preservation was 43.18 per cent.

Aspects wise participation gap focuses that highest gap was observed in the marketing components (51.33%) than storage (48.00 %), grading (47.80%) and n packaging (46.00 %), which were ranked I, II, III and IV respectively. Similarly, knowledge gap was found in the preparation of products component was 43.20 per cent and fruit and vegetables selection and washing aspect were found medium knowledge gap i.e. 38.67 and 36.68 per cent , respectively. Findings are supported by Khatri (2013), Gedam and Padaria (2014) and Hada and Bansal (2017) they revealed that wide technological gap in knowledge and practice of rural women was found regarding processing and preservation of fruits and vegetables.

**Conclusion**

It can be concluded that majority of respondents had medium level of knowledge and participation regarding processing and preservation of fruits and vegetables and high technological gap in knowledge and practice was found. It may be due to the lack of awareness and education about proper fruit and vegetables processing and preservation techniques. Hence there is need to improve knowledge and practices of rural area women regarding post harvest technologies. Providing timely education in the form of training and educational intervention programme to the rural women could fill these gaps in knowledge and practices of different aspects of processing and preservation.

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